WHAT IS CLAIMED IS:

1. An audio signal encoding method, comprising:

a producing step of dividing an audio signal into a plurality of sub-band signals, sampling said sub-band signals at respective down-sampling rates depending on the number of said divided sub-band signals, and producing down-sampled sub-band signals; and

an encoding step of producing vector indexes from said down-sampled sub-band signals by performing the vector quantization of said down-sampled sub-band signals on the basis of an analysis-by-synthesis method, said encoding step being of calculating a linear predictive coefficient from a previously decoded signal on the basis of a backward adaptive prediction method.

2. The audio signal encoding method as set forth in claim 1, in which said encoding step is of producing an excitation vector by using the addition of at least two vector code books.

3. The audio signal encoding method as set forth in claim 1, in which said encoding step is of calculating, as a difference signal, the difference between a predictive excitation gain and a real excitation gain, and performing the adaptive scalar quantization of said difference signal.

4. In an audio signal decoding method of decoding an audio signal encoded on the basis of an audio signal encoding method which comprises a producing step of dividing said audio signal into a plurality of sub-band signals, sampling said sub-band signals at respective down-sampling rates depending on the number of said divided sub-band signals, and producing down-sampled sub-band signals; and an encoding step of producing vector indexes from said down-sampled sub-band signals by performing the vector quantization of said down-sampled sub-band signals on the basis of an analysis-by-synthesis method, said encoding step being of calculating a linear predictive coefficient from a previously decoded signal on the basis of a backward adaptive prediction method,

said audio signal decoding method comprises a decoding step of reproducing said down-sampled sub-band signals from said vector indexes by performing the inverse vector quantization of said vector indexes, and a synthesizing step of interpolating said reproduced sub-band signals at respective up-sampling rates, and reproducing said audio signal from said interpolated sub-band signals, said decoding step being of calculating a linear predictive coefficient from a previously decoded signal on the basis of said backward

adaptive prediction method.

5. The audio signal decoding method as set forth in claim 4, in which said decoding step is of receiving said vector indexes encoded on the basis of said audio signal encoding method in which said encoding step is of producing an excitation vector by using the addition of at least two vector code books, and said decoding step is of producing an excitation vector by using the addition of at least two vectors equivalent to said vector indexes.

6. The audio signal decoding method as set forth in claim 4, in which said decoding step is of receiving said vector indexes encoded on the basis of said audio signal encoding method in which said encoding step is of calculating, as a difference signal, the gain difference between a predictive excitation gain and a real excitation gain, and performing the adaptive scalar quantization of said difference signal, and said decoding step is of calculating, as an excitation gain, the addition between said predictive excitation gain and said gain difference obtained from said quantized difference signal on the basis of said backward adaptive prediction method.

7. In a transmitter comprising an encoding unit for encoding an audio signal on the basis of an audio signal encoding method which comprises a producing step of dividing said audio signal into a plurality of sub-band signals, sampling said sub-band signals at respective down-sampling rates depending on the number of said divided sub-band signals, and producing said sub-band signals sampled at said down-sampling rates, and an encoding step of producing vector indexes from said down-sampled sub-band signals by performing the vector quantization of said down-sampled sub-band signals on the basis of an analysis-by-synthesis method, said encoding step being of calculating a linear predictive coefficient from a previously decoded signal on the basis of a backward adaptive prediction method,

said transmitter is adapted to transmit said audio signal encoded by said encoding unit, wherein

said encoding unit includes an audio signal dividing filter bank for dividing said audio signal into a plurality of sub-band signals, sampling said sub-band signals at respective down-sampling rates depending on the number of said divided sub-band signals, and producing said sub-band signals sampled at said down-sampling rates, and an encoder for producing vector indexes from said down-sampled sub-band signals by performing the vector quantization of said down-sampled sub-band signals on the basis of an analysis-by-synthesis method, said encoder being adapted to calculate a linear predictive coefficient

from a previously decoded signal on the basis of a backward adaptive prediction method.

8. The transmitter as set forth in claim 7, in which

said encoder is adapted to produce an excitation vector by using the addition of at least two vector code books on the basis of said audio signal encoding method in which said encoding step is of producing an excitation vector by using the addition of at least two vector code books.

9. The transmitter as set forth in claim 7, in which

said encoder is adapted to produce a difference signal indicative of the difference between a predictive excitation gain and a real excitation gain, and performing the adaptive scalar quantization of said difference signal on the basis of said audio signal encoding method in which said encoding step is of calculating, as a difference signal, the difference between a predictive excitation gain and a real excitation gain, and performing the adaptive scalar quantization of said difference signal.

10. A receiver comprising a decoding unit for receiving an audio signal encoded on the basis an audio signal encoding method which comprises a producing step of dividing said audio signal into a plurality of sub-band signals, sampling said sub-band signals at respective down-sampling rates depending on the number of said divided sub-band signals, and producing said sub-band signals sampled at said down-sampling rates, and an encoding step of producing vector indexes from said down-sampled sub-band signals by performing the vector quantization of said down-sampled sub-band signals on the basis of an analysis-by-synthesis method, said encoding step being of calculating a linear predictive coefficient from a previously decoded signal on the basis of a backward adaptive prediction method, said decoding unit being adapted to decode said received audio signal on the an audio signal decoding method which comprises a decoding step of reproducing said sub-band signals from said vector indexes by performing the inverse vector quantization of said vector indexes, and a synthesizing step of interpolating said reproduced sub-band signals at respective up-sampling rates, and reproducing an audio signal from said interpolated sub-band signals, said decoding step being of calculating a linear predictive coefficient from a previously decoded signal on the basis of said backward adaptive prediction method, wherein

said decoding unit includes a decoder for reproducing said sub-band signals from said vector indexes by performing the inverse vector quantization of said vector indexes, and a sub-band synthesizing filter bank for interpolating said reproduced sub-band signals at

respective up-sampling rates, and reproducing an audio signal from said interpolated sub-band signals, said decoder being adapted to calculate a linear predictive coefficient from a previously decoded signal on the basis of said backward adaptive prediction method.

11. The receiver as set forth in claim 7, in which

said decoder is adapted to produce an excitation vector by using the addition of at least two vector code books on the basis of said audio signal encoding method in which said encoding step of said audio signal encoding method is of producing an excitation vector by using the addition of at least two vector code books, and said decoding step is of producing an excitation vector by using the addition of at least two vectors equivalent to said vector indexes.

12. The receiver as set forth in claim 7, in which

said decoder is adapted to calculate, as an excitation gain, the addition between said predictive excitation gain and said gain difference obtained from said quantized difference signal on the basis of said audio signal decoding method in which said encoding step of said audio signal encoding method is of calculating, as a difference signal, the gain difference between a predictive excitation gain and a real excitation gain, and performing the adaptive scalar quantization of said difference signal, and said decoding step is of calculating, as an excitation gain, the addition between said predictive excitation gain and said gain difference obtained from said quantized difference signal on the basis of said backward adaptive prediction method.

13. A wireless microphone system, comprising:

a transmitter comprising an encoding unit for encoding an audio signal on the basis of an audio signal encoding method which comprises a producing step of dividing said audio signal into a plurality of sub-band signals, sampling said sub-band signals at respective down-sampling rates depending on the number of said divided sub-band signals, and producing said sub-band signals sampled at said down-sampling rates, and an encoding step of producing vector indexes from said down-sampled sub-band signals by performing the vector quantization of said down-sampled sub-band signals on the basis of an analysis-by-synthesis method, said encoding step being of calculating a linear predictive coefficient from a previously decoded signal on the basis of a backward adaptive prediction method, said transmitter being adapted to transmit said audio signal encoded by said encoding unit, wherein

said encoding unit includes an audio signal dividing filter bank for dividing said

audio signal into a plurality of sub-band signals, sampling said sub-band signals at respective down-sampling rates depending on the number of said divided sub-band signals, and producing said sub-band signals sampled at said down-sampling rates, and an encoder for producing vector indexes from said down-sampled sub-band signals by performing the vector quantization of said down-sampled sub-band signals on the basis of an analysis-by-synthesis method, said encoder being adapted to calculate a linear predictive coefficient from a previously decoded signal on the basis of a backward adaptive prediction method.

14. A wireless microphone system as set forth in claim 13, which further comprises:

a receiver comprising a decoding unit for receiving an audio signal encoded on the basis an audio signal encoding method which comprises a producing step of dividing said audio signal into a plurality of sub-band signals, sampling said sub-band signals at respective down-sampling rates depending on the number of said divided sub-band signals, and producing said sub-band signals sampled at said down-sampling rates, and an encoding step of producing vector indexes from said down-sampled sub-band signals by performing the vector quantization of said down-sampled sub-band signals on the basis of an analysis-by-synthesis method, said encoding step being of calculating a linear predictive coefficient from a previously decoded signal on the basis of a backward adaptive prediction method, said decoding unit being adapted to decode said received audio signal on the an audio signal decoding method which comprises a decoding step of reproducing said sub-band signals from said vector indexes by performing the inverse vector quantization of said vector indexes, and a synthesizing step of interpolating said reproduced sub-band signals at respective up-sampling rates, and reproducing an audio signal from said interpolated sub-band signals, said decoding step being of calculating a linear predictive coefficient from a previously decoded signal on the basis of said backward adaptive prediction method, wherein

said decoding unit includes a decoder for reproducing said sub-band signals from said vector indexes by performing the inverse vector quantization of said vector indexes, and a sub-band synthesizing filter bank for interpolating said reproduced sub-band signals at respective up-sampling rates, and reproducing an audio signal from said interpolated sub-band signals, said decoder being adapted to calculate a linear predictive coefficient from a previously decoded signal on the basis of said backward adaptive prediction method.